

The following four indicators (4.7 – 4.10) should be selected as appropriate to a particular course for additional content and depth:

C-4.7 Summarize the oxidation and reduction processes (including oxidizing and reducing agents).

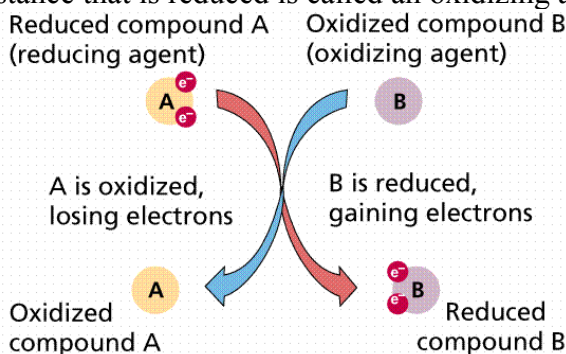
Revised Taxonomy Level 2.4 Summarize conceptual knowledge

This concept was not addressed in physical science

It is essential for students to

❖ Understand that “oxidation” is defined as the process of losing electrons, “reduction” is defined as process of gaining electrons

- A substance that is “oxidized” has lost electrons
- A substance that is “reduced” has gained electrons
- When a substance is oxidized, it “gives” electrons to another substance, causing that substance to gain electrons or be reduced.
 - A substance that causes another substance to be reduced is called a “reducing agent”
 - Any substance that is oxidized is a reducing agent
- When a substance is reduced, it “takes” electrons from another substance, causing that substance to lose electrons or be oxidized.
 - A substance that causes another substance to be oxidized is called an “oxidizing agent”
 - Any substance that is reduced is called an oxidizing agent



- Cite examples of oxidation and reduction reactions

Assessment

The revised taxonomy verb, summarize means “to abstract a general theme or major point” For this indicator, the major focus of assessment should be to insure that students have a deep conceptual understanding of the processes of oxidation and reduction. Conceptual knowledge requires that students understand the interrelationships among the basic elements within a larger structure that enable them to function together. In this case, that students understand how each substance in the reaction is changed during an oxidation/reduction reaction.